

METHODS AND APPARATUS FOR FORMING AND CONTROLLING THE DIAMETER OF DRAWN OPTICAL GLASS FIBER

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Abstract

An apparatus for forming optical fiber from a glass preform using a forming gas includes a draw furnace having first and second opposed ends. The draw furnace defines an exit opening at the second end and a furnace passage extending between the first and second ends. A control tube extends through the exit opening of the draw furnace. The control tube defines first and second opposed tube openings and a tube passage extending between the first and second tube openings. The control tube includes a first tube section and a second tube section. The first tube opening and the first tube section are disposed in the furnace passage and cooperate with the passage of the draw furnace to form a buffer cavity adjacent the control tube. The second tube opening and the second tube section are disposed downstream of the draw furnace. The tube passage includes an inner diameter. The inner diameter of the tube passage is less than an inner diameter of the furnace passage. The draw furnace and the control tube are adapted such that substantially all of the forming gas enters the furnace passage upstream of the first tube opening and exits the apparatus through the control tube. A method for forming an optical fiber includes providing an apparatus as described above. An optical glass fiber is drawn through the furnace passage and the control tube. During the step of drawing the optical glass fiber, a forming gas is flowed through the furnace passage and the control tube such that substantially all of the forming gas enters the furnace passage upstream of the first tube opening and exits the apparatus through the control tube.

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